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ENTOMOLOGY.[1]

The Pear Leaf Blister.—Mr. M. V. Slingerland has recently rendered an important service to economic entomology by showing that the injuries of *Phytoptus pyri*, the mite which causes the pear leaf blister can be controlled by spraying the trees in winter with kerosene emulsion. In a recent bulletin[2] he presents the most satisfactory account of this pest that has yet been published, recording the experiments which have led to the discovery of the remedy. The disease is said to appear on the leaves early in spring "in the form of red blister-like spots an eigth of an inch or more in diameter. During this red stage of the disease, the spots are more conspicuous on the upper surface of the leaves. About June 1, the spots gradually change to a green color hardly distinguishable from the unaffected portions of the leaf; this change takes place on the lower side of the leaf first, and the spots may thus be red above and green below. In this green stage, which seems to have been overlooked, the badly diseased leaves present a slightly thicker corky appearance; otherwise the disease is not readily apparent especially where not severe. This green stage lasts about a week or ten days; and about June 15, the spots may be found changing to a dark brown color beginning on the lower side of the leaf. The tissue of the diseased parts or spots then presents a dead, dry, brown or black, corky appearance. The spots are also more conspicuous on the lower side and remain unchanged until the leaves fall in the autumn. They occur either singly scattered over the surface of the leaves or often coalesce forming large blotches which sometimes involve a large portion of the leaf."

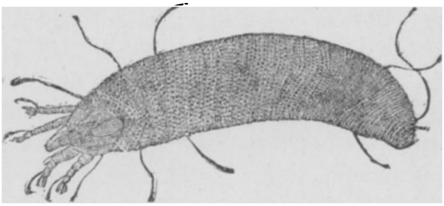

Fig. 1.—*Phytoptus pyri*. Magnified.

In describing the life history of the Phytoptus mite Mr. Slingerland says: "The exceedingly minute oval grayish eggs are laid by the females in the spring within the galls that they have formed, and here

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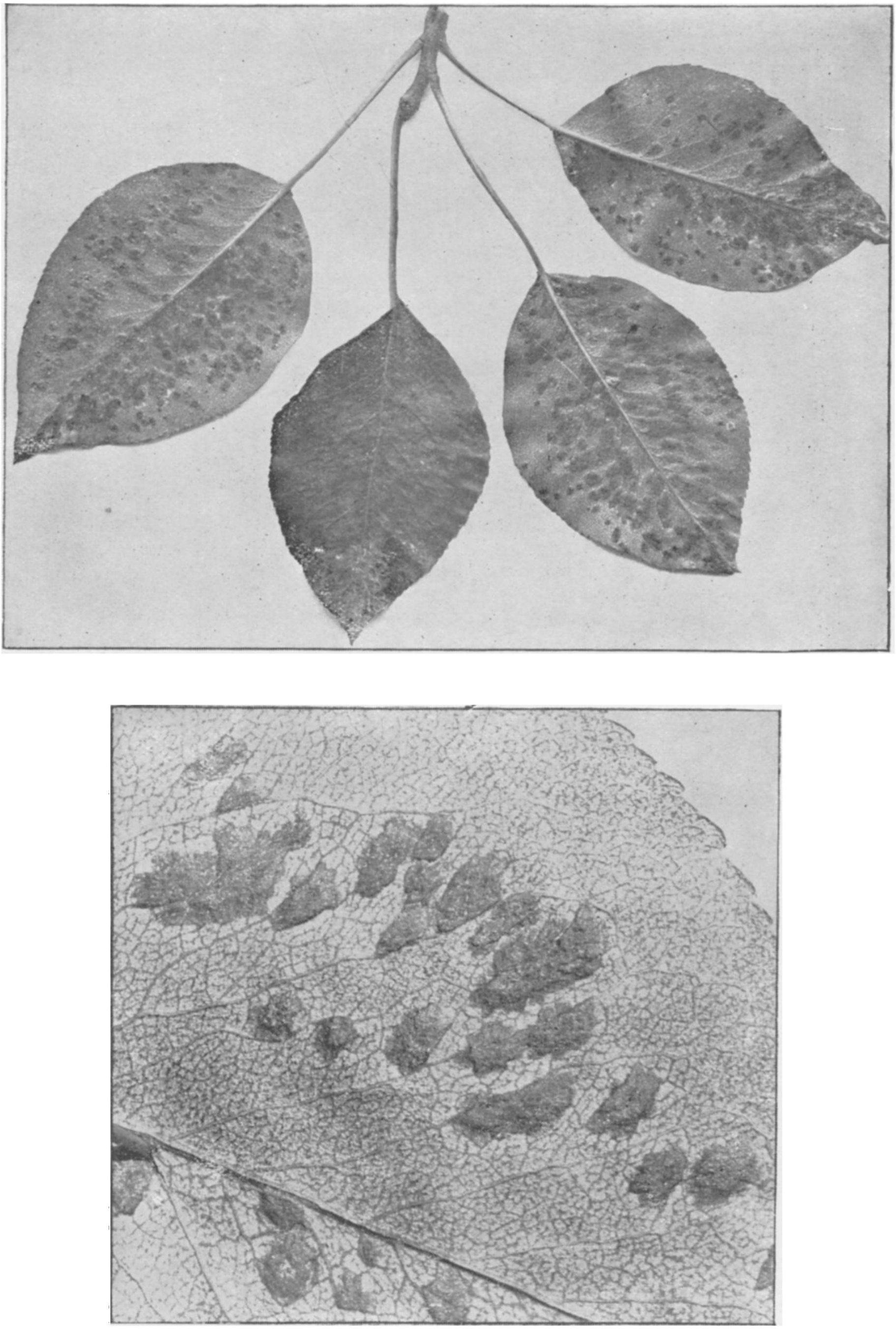
[1] Edited by Clarence M. Weed, New Hampshire College, Durham, N. H.

[2] Cornell University Agr. Exp. Station Bull. 61, pp. 317–328

PLATE XVI.



Work of the Pear Leaf Blister Mite.

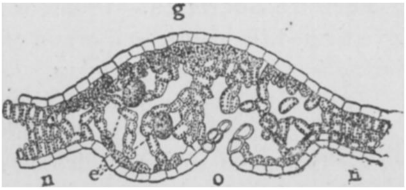


Fig. 2.—Section of leaf showing gall in red stage, *n*, *n*, normal leaf; *o*, opening of gall; *e*, eggs. (After Sorauer).

the young are hatched. How long they remain within the gall of their parent has not been ascertained. But sooner or later they escape through the opening in it, and seeking a healthy part of a leaf or more often crawling to the tenderer leaves of the new growth, they work their way into the tissue and new galls are thus started. In this manner the galls on a tree are often rapidly multiplied during the summer. The mites live within the galls, feeding upon the plant cells, until the drying of the leaves in the autumn. They then leave the galls through the openings and migrate to the winter buds at or near the ends of the twigs. Here they work their way beneath the two or three outer scales of the buds where they remain during the winter. Fifteen or twenty may often be found under a single bud scale. In this position they are ready for business in the spring as soon as growth begins; and they doubtless do get to work early for their red galls are already conspicuous before the leaves get unrolled.

" The mites instinctively migrate from the leaves as soon as the latter become dry. Whenever branches were brought into the insectary, as soon as the leaves began to dry, the mites left them and gathered in great numbers in the buds. It is impossible to accurately estimate the number of mites that may live in the galls on a single leaf. Sections of galls made while in their red stage would seldom cut through more than two or three mites; but sections of the brown galls often showed four or five times as many. Thus on a badly infested leaf there is without doubt at least a thousand of the mites."

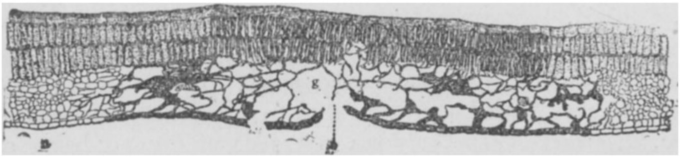


Fig. 3.—Section of the leaf showing structure of gall in autumn; *g*, gall; *n*, normal leaf; *o*, opening of gall.

The upper figure on the accompanying plate shows a cluster of infected leaves representing the brown stage of the disease as seen from below on three leaves and from above on one leaf; and the lower one shows part of an infested leaf, seen from below, with several of the galls considerably enlarged.

Termite Societies.—Professor B. Grassi and Dr. A. Sandias have investigated the nature and origin of the Termite society in *Calotermes flavicollis* and *Termes lucifugus.* A Calotermes colony may include (*a*) indifferent larvæ, capable of becoming soldiers or sexual members; (*b*) larvæ and pupæ of sexual members with rudiments of wings; (*c*) soldier larvæ and soldiers which may arise from *a* and *b; (d)* winged sexual insects: (*e*) a true royal pair with vestiges of wings; (*f*) larvæ of 'reserve' sexual members and the reserve kings and queens which arise from these. These last larvæ may be developed from *a* or from various stages of *b.*

In the Termes nest there is a special caste of workers and no distinctive royal pair. The society includes (*a*) very young indifferent larvæ; (*b*) larger larvæ and the workers and soldiers to which they give rise; (*c*) winged sexual animals; (*d*) various stages of reserve and complementary sexual animals.

The one type, that illustrated by Calotermes, is founded by a king and queen, who may be replaced by a pair of reserve royal individuals, *i. e.* by a 'neotænic' couple. The second less primitive type, illustrated by Termes, contains several 'neotænic' couples, while kings are only temporary; in this case the nest arises in a secession from an older colony.

One of the most interestsng results concerns the influence of nutrition in producing polymorphism. Thus the reserve sexual members are fed not only in the larval state but afterwards from salivary secretion only, a nutritive diet which probably hastens the rapid development of the reproductive system.—*Journal Royal Microscopical Society.*

Habits of the Leaping-Ant of Southern Georgia.—In the pine forests upon the sandy loam of Thomas County, near Thomasville, Georgia, I discovered a nest of *Atta brunnea* (*Odontomachus brunneus* Roger.) No hillocks were formed, the openings to the galleries in the earth being at the surface level. The aperture was large enough to have allowed queens as large as those of *Oecodoma* to have passed, the workers (the only sex observed) of *brunnea* being much smaller. The workers jump several inches when disturbed, the leap being backwards and being caused by snapping the mandibles together.

The cocoon contains the pupa of the worker in September.

Atta Brunnea (Roger). Georgia.

A. (*O.*) *hœmatodes* (L.) of the West Indies may prove to be a variety of this.

☿. Length 9 mm. Of a uniform brown color. Legs and sometimes the tip of the abdomen and the head and thorax, especially beneath, are paler. Mandibles finely serrate within; the tip tridentate, middle tooth smallest. Palpi invisible, obsolete.

Tibæ all one-spurred. Scale of the petiole produced into a spine. The thorax above is densely striate, the head above with finer striations.

ATTA CLARA Texas.

☿. Uniformly honey-yellow. Scale smaller than in *brunnea,* not forming a spine.

♂. Length. 6 mm. Head ordinary, as wide as long. Eyes oval, slightly sinuate both before and behind, black. Ocelli large, white. Antennæ long as body, not elbowed; brown, except first joint. Mandibles distant, minute, their tips touching. Palpi minute. Wings clear, veins yellow, recurrent vein received in base of second submarginal cell. Entire body and legs yellow. Abdomen hairy, second constriction deep, claspers large, scale rounded.

WM. HAMPTON PATTON, Hartford, Conn.

Note on the Winter-Ant.—Since writing the article upon this ant (AMER. NAT., Oct., '92) I have found the sexes paired in flight, at Hartford, Conn., on the third of August. This indicates the existence of a second or summer brood of the species. The male of *Prenolepis imparis* (Say) Patton, measures only about one-eigth of an inch, the female is twice as long and much more bulky. The sexes also differ in color, the males being black, the workers dark brown, and the females dark honey-yellow.

WM. HAMPTON PATTON.